# Fiber and Polymer Science (PhD)

## Degree Requirements

The Ph.D. degree in Fiber and Polymer Science symbolizes the ability of the recipient to undertake original and scholarly work at the highest levels without supervision. The degree is, therefore, not granted simply upon the completion of a stated amount of course work but rather upon demonstration by the student of a comprehensive knowledge base and high attainment in scholarship. The student demonstrates this ability by passing a series of courses, creating a written critical literature review and original research proposal, defending an oral preliminary examination, writing a dissertation reporting the results of an original investigation, and making a final oral defense of the research before the student's advisory committee and other interested members of the University community.

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Hours</th>
<th>Counts towards</th>
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</thead>
<tbody>
<tr>
<td>FPS 801</td>
<td>Seminar</td>
<td>14</td>
<td></td>
</tr>
<tr>
<td>FPS 770</td>
<td>Advances in Polymer Science</td>
<td>2</td>
<td></td>
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<tr>
<td>TMS 762</td>
<td>Physical Properties Of Fiber Forming Polymers, Fibers and Fibrous Structures</td>
<td>2</td>
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</table>

Select two additional Courses from the following:

### Polymer Science

<table>
<thead>
<tr>
<th>Code</th>
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<th>Hours</th>
<th>Counts towards</th>
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<tbody>
<tr>
<td>TC 771</td>
<td>Polymer Microstructures, Conformations and Properties</td>
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### Fiber Science

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<tr>
<th>Code</th>
<th>Title</th>
<th>Hours</th>
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<tbody>
<tr>
<td>TC 704</td>
<td>Fiber Formation--Theory and Practice</td>
<td></td>
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<tr>
<td>TMS 761</td>
<td>Mechanical and Rheological Properties Of Fibrous Material</td>
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<tr>
<td>TMS 763</td>
<td>Characterization Of Structure Of Fiber Forming Polymers</td>
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### Coloration and Wet Processing

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<th>Code</th>
<th>Title</th>
<th>Hours</th>
<th>Counts towards</th>
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<tbody>
<tr>
<td>TC 706</td>
<td>Color Science and Color Laboratory</td>
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<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Hours</th>
<th>Counts towards</th>
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<tbody>
<tr>
<td>TC 706 &amp; TC 707</td>
<td>Color Science and Color Laboratory</td>
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Additional Courses: 58

“Elective Courses” that will be applied to reach 72 credit hours will be determined in conjunction with the academic committee.

**Total Hours**: 72

1. All students must take two (2) semesters of FPS 801 Seminar.
2. Every student must obtain a grade of B or better in each of the four qualifying courses chosen.

## Additional Requirements

- A minimum of 72 credit hours is required of students entering the program with a B.S. degree, or a minimum of 54 credit hours beyond the M.S. degree is required. (Students, who enter the Ph.D. program directly upon completion of an M.S. at NC State, may be allowed credit for up to 30 hours of their M.S. and thus would require 42 additional credit hours to complete the Ph.D.)
- Most of these credit hours are expected to be research credits (FPS 893 Doctoral Supervised Research or FPS 895 Doctoral Dissertation Research).
- Following successful course completion, the student needs to pass the defense of a research proposal to obtain the candidacy for the Ph.D degree.
- The final examination is an oral exam where the student presents and defends her/his research procedures, results and conclusions. The presentation will be made to an examining committee consisting of the student’s advisory committee and is open to interested faculty, staff and students. After the presentation the student will be orally examined by the examining committee. The final oral examination can be scheduled once all coursework requirements have been fulfilled and the committee is satisfied that the dissertation is complete, but not earlier than one semester after admission to candidacy.
- The anticipated time for completion of the Ph.D. program is four years for a student entering from a B.S. degree and three years for entry from an M.S. degree. The minimum time required (in exceptional cases) is two years beyond entry if the student obtained an M.S. degree from NC State.

## Faculty

### Full Professors

Harald Ade

Charles M. Balik
Roger L. Barker
Keith R. Beck
Carl L. Bumgardner
Timothy Clapp
Ahmed Mohamed El-Shafei
Peter Fedkiw
Harold S. Freeman
Jan Genzer
A. Blanton Godfrey
Maureen Grasso
David Hinks
Cynthia L. Istook
Saad A. Khan
Tushar K. Ghosh
Russell E. Gorga
Christopher B. Gorman
Peter J. Hauser
Samuel Mack Hudson
Warren J. Jasper
Jeffrey Allen Joines
Martin William King
Traci Ann May Lamar
Karen Leonas
Trevor J. Little
Lucian Lucia
Marian G. McCord
Roger Narayan
Melissa Pasquinelli
Behnam Pourdeyhimi
Jon Paul Rust
Abdel-fattah Mohamed Seyam
Renzo Shamey
Richard Spontak
Alan E. Tonelli
Richard A. Venditti
Yingjiao Xu

Xiangwu Zhang

**Associate Professors**

Katherine Emma Annett-Hitchcock
Pamela Banks-Lee
Kristin Anne Barletta
Philip Bradford
Emiel DenHartog
Wei Gao
Helmut H. Hergeth
George Lawrence Hodge
Jesse Stephen Jur
Richard Kotek
Wendy E. Krause
Jerome Lavelle
Shuang Lim
Kavita Mathur
Lokendra Pal
Lisa Parrillo-Chapman
Sonja Salmon
Minyoung Suh
Nelson Vinueza

**Assistant Professors**

Xiaomeng Fang
Ericka Ford
Amanda Mills
Robert Ormond
Eunkyoung Shim
Januka Budhathoki Uprety
Rong Yin
Mengmeng Zhu

**Practice/Research/Teaching Professors**

Nagendra Anantharamaiah
Raymond Earl Fornes
Genevieve Garland
Dieter Griffis
Hechmi Hamouda
Benoit Maze
Jialong Shen

Emeritus Faculty
Subhash K. Batra
Robert Alan Donaldson
Aly H El-Shiekh
Raymond Earl Fornes
Perry L. Grady
Bhupender S. Gupta
Harold B. Hopfenberg
Samuel Clyde Winchester Jr
Stephen Michielsen
Gary N. Mock
Mansour H. Mohamed
William Oxenham
Nancy Powell
Suzanne Townsend Purrington
William C. Stuckey Jr
Carl B. Smith
Gary W. Smith
Moon Won Suh
Michael Herbert Theil
Charles Tomasinò
Carl F. Zorowski

Adjunct Faculty
Genevieve Garland
Abhay Sham Joojede
Mohamad Samir Midani
Behnam Pourdeyhimi